

adding boron into the carbonaceous material or/and the flux, or around the carbonaceous material and the flux; and

diffusing the carbonaceous material into the flux under a high temperature and pressure to form a boron-doped single crystal diamond p-type semiconductor on a seed crystal diamond.

19. (New) The method of Claim 18, wherein the isotopically purified ^{12}C or ^{13}C has a purity of at least 99.5%.

20. (New) The method of Claim 18, wherein said boron-doped single crystal diamond p-type semiconductor has a boron content not exceeding 100 ppm.

21. (New) The method of Claim 18, wherein said carbonaceous material is at least one member selected from the group consisting of pyrolytic carbon, a diamond synthesized by chemical deposition and carbon synthesized by chemical decomposition.

22. (New) A single crystal diamond having a boron content and consisting of boron in an amount not exceeding 100 ppm and at least 99.5% isotopically pure ^{12}C or ^{13}C .

23. (New) A process for producing a single crystal diamond containing boron comprising the steps of:

providing a flaky pyrolytic carbonaceous material;
providing a metal solvent containing a nitrogen getter;

adding boron to the flaky pyrolytic carbonaceous material or/and the metal solvent;

dissolving the flaky pyrolytic carbonaceous material in the metal solvent and precipitating a single crystal

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diamond doped with boron in an amount not exceeding 100 ppm, on a seed crystal diamond.

24. (New) The process of Claim 23, wherein the flaky pyrolytic carbonaceous material has a content of isotopically pure ^{12}C or ^{13}C of at least 99.5%.

25. (New) The process of Claim 23, wherein the single crystal diamond doped with boron is precipitated at a side of the metal solvent having a lower temperature than a side of the solvent having a higher temperature.

26. (New) The process of Claim 23, wherein the single crystal diamond doped with boron precipitates from the metal solvent under conditions of a high temperature and pressure.

27. (New) The process of Claim 23, wherein the flaky pyrolytic carbonaceous material is formed by pressing pyrolytic carbon powder in a steel die; introducing the pyrolytic carbon powder into a graphite capsule and heating the pyrolytic carbon powder in an induction heating furnace under a vacuum and at a temperature of 1,800 to 2,000°C to anneal the pyrolytic carbon powder.

28. (New) The process of Claim 23, wherein the diamond is doped with boron in an amount of up to 60 ppm.

29. (New) The process of Claim 23, wherein the diamond is doped with boron in an amount of up to 30 ppm.

30. (New) The process of Claim 23, wherein the single crystal diamond doped with boron is a p-type semiconductor.